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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

FOREST INSECT SURVEYS

PLUMAS NATIONAL FOREST

Season of 1934

By

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FOREST INSECT SURVEYS- PLUMAS NATIONAL FOREST, 1934

INTRODUCTION

The 1934 forest insect survey of the Eastern Plumas Working Circle was conducted as an EMPIRA project, in which the United States Forest Service and the United States Bureau of Entomology and Plant Quarantine cooperated. During the period from August 21st to September 1st, five half-section plots and eleven miles of traverse, totalling 2488 acres or 2.7% of the timbered area in five entomological units, were cruised by a three man crew. The following are the approximate costs:

ITEM	COST	MAN-DAYS
Field Work	$ 188.40	34
Office Work	43.32	8
Transportation and Miscellaneous	12.90	
T o t a l s	$ 244.62	40

HISTORY OF INFESTATION

The first comprehensive forest insect survey of the area was undertaken in 1933 as a part of the E.C.W. program. Preceding this a general reconnaissance of infestation conditions had been made in 1930, 1931 and 1932. An endemic infestation existed throughout the area until 1933. During 1933 it became evident that the environmental forces, that had been active for a decade in the Modoc and for about four years in the Lassen, were now beginning to have effect upon the stands in the Eastern Plumas. As a result, definite upward trends of infestation appeared and have continued during the present season.

GENERAL INFESTATION CONDITIONS

The Eastern Plumas can be considered as being a transition type between the pure ponderosa pine stands exemplified by the Modoc and the jeffrey pine stands of the Mono and Inyo. Similarly infestation characteristics are transitional between the heavy chronic infestation in ponderosa pine to the north and the endemic status in jeffrey pine to the south.

Infestation in jeffrey pine, due to the preponderance of that species, has been and continues to be the most important cause of loss in the area. However, a marked increase in the amount of infested ponderosa pine is now taking place. During the present season the amount of ponderosa pine killed, in relation to the total amount of timber killed, has increased from 27 to 38 per cent, a gain of 11 per cent.

Dendroctonus brevicomis is the most important insect species attacking ponderosa pine in the area and during the present season has shown a marked increase, while all other forms have decreased in importance. This is in accord with observations made on the Modoc, Lassen and Shasta National

Forests. In jeffrey pine, Dendroctonus jeffreyi remains about the same in relation to other insects. Although Dendroctonus brevicomis has increased in importance, Dendroctonus jeffreyi is still the most important, destructive forest insect in the area.

In four of the five units covered by cruises, the estimated loss per acre for 1934 is approximately 210 B.M., which in all cases is an increase over 1933. In the fifth unit, Dixie Valley, the per acre loss is only 131 B.M. per acre, which is a decrease from that of 1933. The volume of the average infested tree has increased during each of the last two years.

The general infestation trends in the east side type of four forests, as illustrated by the per acre losses in 1932, 1933 and 1934, are interesting in that they reflect to some extent the effects of low temperature conditions during the winter of 1932-33 (Fig. 1). An analysis of this graph shows that during 1933, infestation on the Modoc decreased most, Shasta next and Lassen least, while that on the Plumas increased. This varies from our original forecast in that the Shasta and Plumas have reversed places.

During the summer of 1933 a study of the freeze results led to the statement that the order of effectiveness was Modoc, Lassen, Shasta and Plumas. At the same time it was pointed out that Dendroctonus brevicomis was affected to the greatest extent and that Dendroctonus jeffreyi suffered very little. With this in mind, a logical analysis of the final results can now be made. The Modoc with a pure ponderosa pine stand, a heavy western pine beetle infestation and the lowest temperatures exhibited the greatest reduction. The Shasta with similar stands and composition of infestation reacted similarly and to a slightly less extent than the Modoc. The Lassen, with a considerable admixture of jeffrey pine and jeffrey pine beetle, was third in amount of infestation reduction. The Plumas with a preponderance of jeffrey pine and the jeffrey pine beetle acted nearly independently of the freeze and exhibited an increase.

Effects of the low temperature conditions were exerted only during 1933. In 1934 epidemic infestations prevail on the Modoc and Lassen, with the losses reaching a higher level than in 1932. On the Shasta an increase occurred in 1934, but the infestation remains considerably below the 1932 level. The increase felt in 1933 on the Plumas has continued with somewhat decreased velocity during 1934.

INFESTATION CONDITIONS BY UNITS

Table I is a summary of plot cruise results, giving the figures for 1932, 1933 and the estimated losses for 1934. Table II shows the estimates for the entomological units, for which information is available, in terms of trees and volume per section and per unit. Figure II shows the loss record for each unit since 1932 and figure III shows the location of the units and plots.

Bass Unit.

With an average per acre loss of 220 B.M., an increase of 182%, this area leads all others, both as to amount of timber killed per acre and as to per cent of increase. Ponderosa pine, overmature, but of good quality,

dominates the stand. Epidemic tendencies are undoubtedly present and are in accord with activities of the western pine beetle in other east side areas. Insect infestation and stand values are such that make this a control possibility. However, lack of good entomological boundaries, the need for using the available funds elsewhere, and the fact that adverse climatic conditions would make winter or spring control very difficult, preclude this area as a project at the present time.

Last Chance Unit.

An estimated per acre loss of 200 B.M. per acre, an increase of 68% over 1933, characterizes this area. Infestation in both ponderosa and jeffrey pine is prevalent. The southern portion of the unit ties in rather closely with the Bass unit and offers similar advantages and disadvantages to control at the present time.

Ferris Unit.

A relatively high loss occurred in this unit during 1933, so that a 14% increase during the present season gives an estimated per acre loss of 213 B.M. A small control possibility was outlined in the Willow Creek Basin for 1933. This same possibility exists for 1934. However, the timber values are not as great as in the Bass and Last Chance units, while the disadvantages remain the same, so no control recommendations are made.

Squaw Valley.

This unit with an increase of 110% is second only to Bass. The estimated average per acre loss of 209 B.M. may be considered as being similar to the Ferris Unit. Relatively low values, coupled with high normal loss, prohibits a consideration of the unit as a control possibility.

Dixie Valley.

A decrease of 39% for 1934 in this area gives an estimated per acre loss of 131 B.M. This decrease can be directly attributed to a marked decrease of insect activity in jeffrey pine, which is the predominant species in the unit.

INSECT CONTROL RECOMMENDATIONS

Control is not recommended for the Ferris, Squaw Valley and Dixie Valley Units, due to a relatively high normal loss, low timber values, pressing need for control elsewhere and climatically adverse working conditions.

It is believed that under ordinary circumstances fall control would have been both feasible and desirable in the Bass and souther portion of the Last Chance Units, due to high losses and good timber values needing protection. No action has been taken because of high priority of other areas where all of the available funds will be expended. Adverse climatic conditions in this area would very materially reduce the efficiency of spring control.

TABLE I

PLOT LOSSES - PLUMAS NATIONAL FOREST

PER SECTION BASIS

Plot: No.	1932 Trees	1932 Volume B.M.	1932 B.M. Per Acre	1933 Trees	1933 Volume B.M.	1933 B.M. Per Acre	1933 Rel. to 1932 %	1934 (estimated) Trees	1934 (estimated) Volume B.M.	1934 (estimated) B.M. Per Acre	1934 (estimated) Rel. to 1933 Per cent
1	94	59,740	93.3	102	85,280	133.2	+42.8	80	100,800	157.5	+18.2
2	206	205,380	320.8	270	292,660	457.3	+42.5	212	313,200	489.4	+ 7.0
3	24	42,440	66.3	32	66,600	104.1	+57.0	36	115,520	180.5	+73.4
4	66	57,580	90.0	134	168,540	263.3	+192.5	88	83,560	130.6	-51.4
5	78	81,940	128.0	124	126,920	198.3	+54.9	188	267,120	417.4	+110.5
AVE.	94	89,405	139.7	132	148,000	231.2	+74.8	121	176,040	275.1	+ 19.0

Traverse - 7			144	168,220	262.8
	9		126	166,640	260.4

TABLE II

ESTIMATED PER SECTION AND UNIT LOSSES

PLUMAS NATIONAL FOREST

UNIT	TIM-BERED ACRES	1932 Losses Per Section Trees	1932 Losses Per Section Vol. BM.	1932 Losses Per Unit Trees	1932 Losses Per Unit Vol. MBM	1933 Losses Per Section Trees	1933 Losses Per Section Vol. B.M.	1933 Losses Per Unit Trees	1933 Losses Per Unit Vol. M.B.M.	1934 Losses Per Section Trees	1934 Losses Per Section Vol. BM.	1934 Losses Per Unit Trees	1934 Losses Per Unit Vol. M.B.M.
Bass	14,660	30	37,820	690	866,000	48	63,630	1,100	1,457,000	82	141,080	1,878	3,230,000
Last Chance	23,260	88	69,870	3,190	2,536,300	77	76,170	2,795	2,765,000	87	128,180	3,158	4,653,000
Ferris	19,200	120	95,730	3,800	2,871,900	130	110,840	3,900	3,695,000	102	136,200	3,060	4,686,000
Squaw Valley	20,230	62	55,670	1,960	1,759,200	62	63,480	1,960	2,005,000	94	133,560	2,970	4,220,000
Dixie Valley	15,940	43	42,810	1,330	1,322,800	100	134,830	2,490	3,357,000	88	83,560	2,190	2,080,000
Totals	93,290			10,770	9,356,200			12,345	13,179,000			13,256	18,269,000

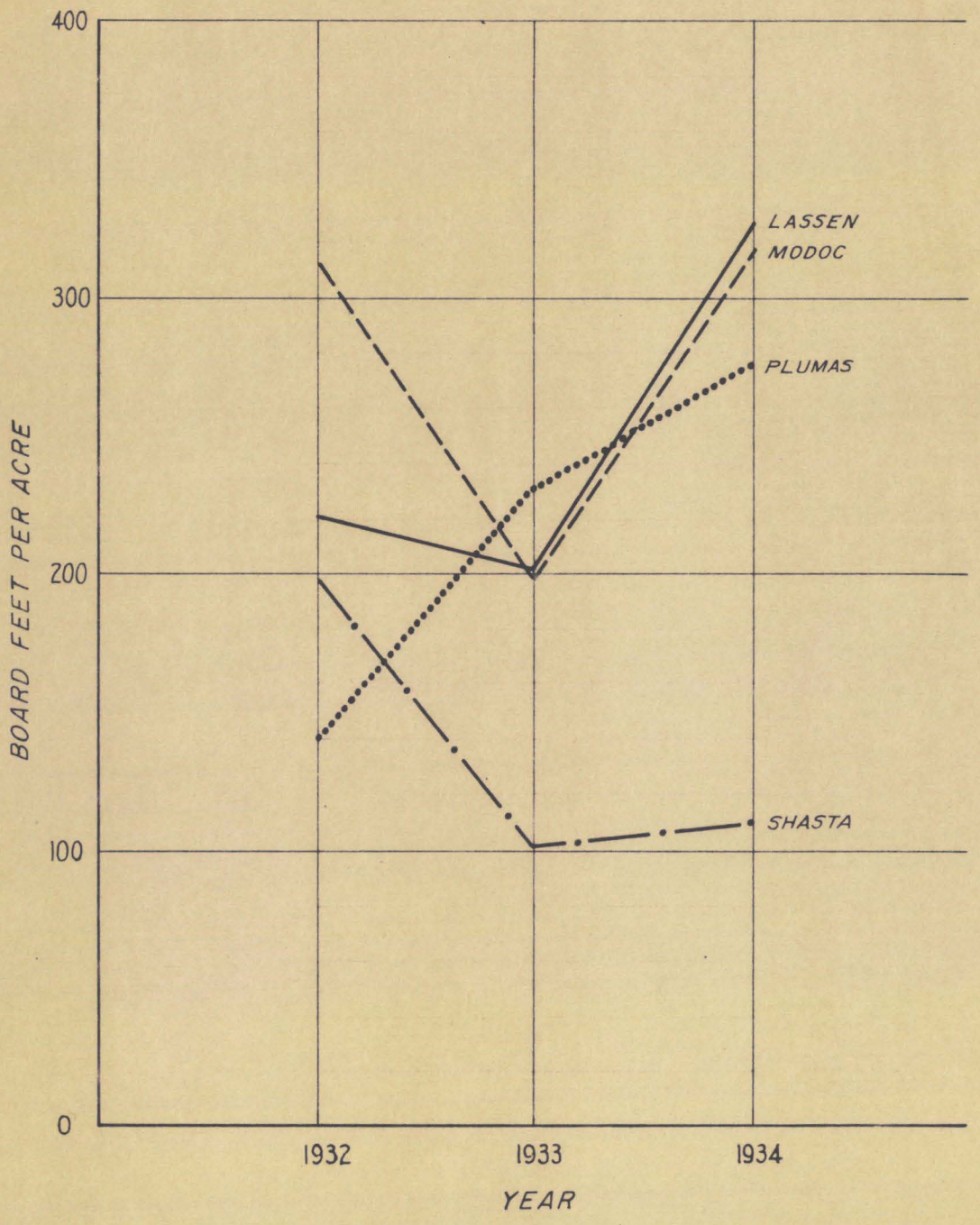
Fig. 1

COMPARISON OF BOARD-FOOT LOSS PER ACRE

ON THE

SHASTA, MODOC, LASSEN, AND PLUMAS NATIONAL FORESTS

CALIFORNIA



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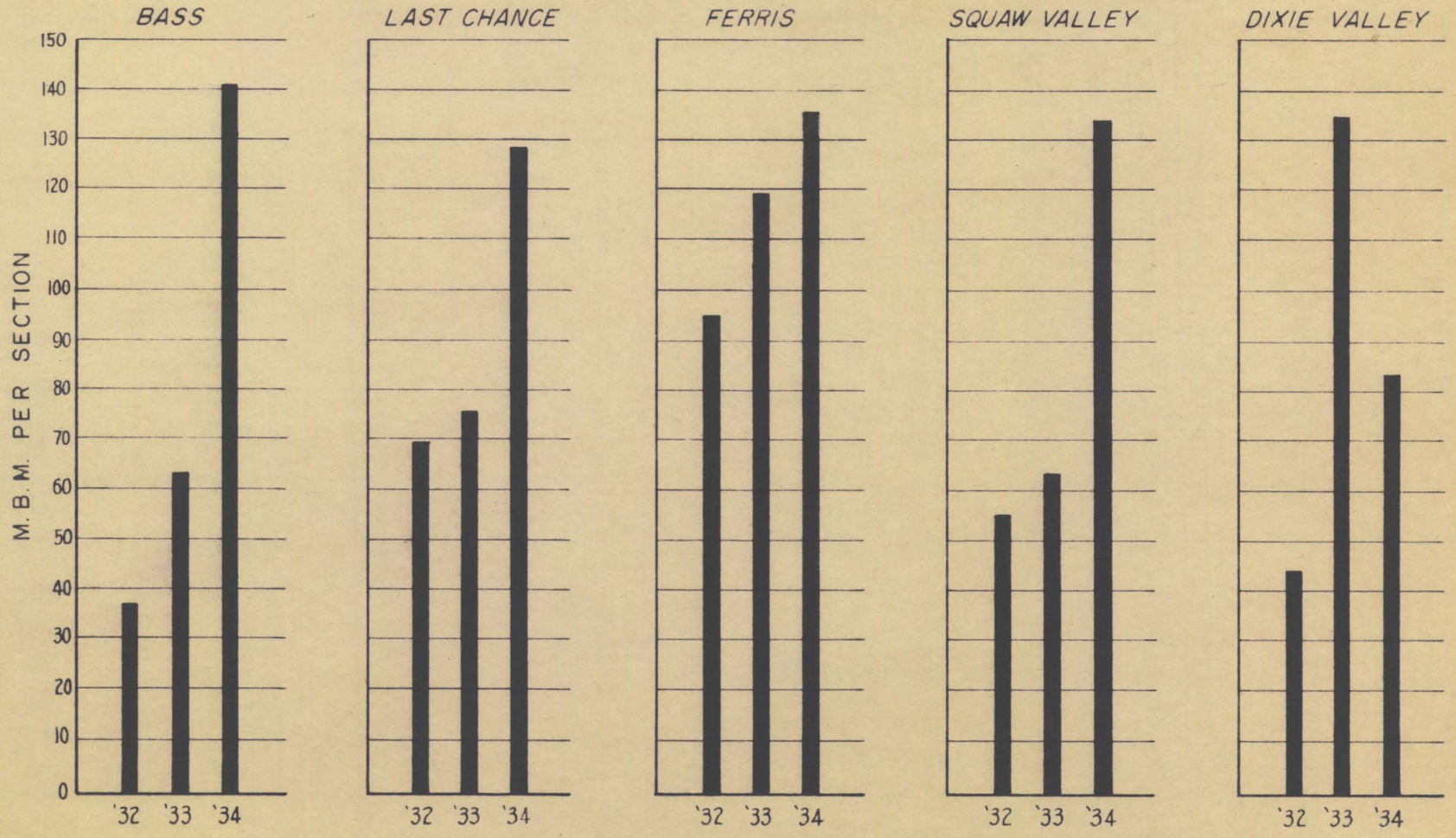
INSECT LOSSES

1932 - 1934

EASTERN PLUMAS WORKING CIRCLE

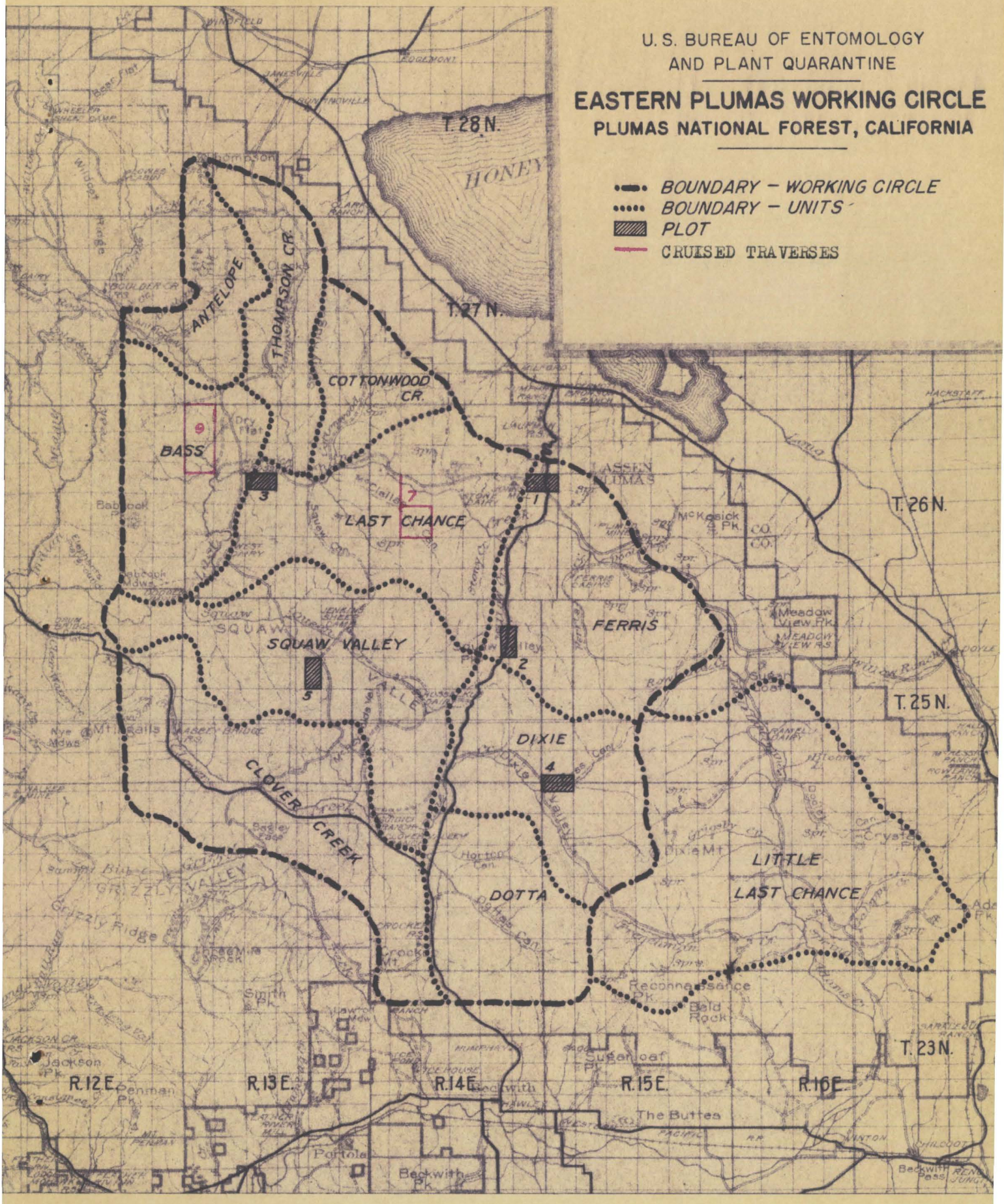
PLUMAS NATIONAL FOREST, CALIFORNIA



ANNUAL M.B.M. LOSSES PER SECTION BY UNITS

Fig. 2

Fig. 3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EASTERN PLUMAS WORKING CIRCLE
PLUMAS NATIONAL FOREST, CALIFORNIA
BOUNDARY – WORKING CIRCLE
BOUNDARY – UNITS
PLOT
CRUISED TRAVERSES
T. 28 N.
T. 27 N.
T. 26 N.
T. 25 N.
T. 23 N.
R. 12 E.
R. 13 E.
R. 14 E.
R. 15 E.
R. 16 E.
HONEY
ANTELOPE
THOMPSON CR.
COTTONWOOD CR.
BASS
LAST CHANCE
SQUAW VALLEY
FERRIS
DIXIE
CLOVER CREEK
DOTTA
LITTLE LAST CHANCE
1
2
3
4
5
7
9